5/16/03

EXECUTIVE SUMMARY

DRAFT IRRIGATION STANDARDS ORDINANCE AND PROCEDURES FOR THE TUCSON METROPOLITAN AREA

Introduction:

Historically water efficiency performance standards have not been addressed in landscape design, installation and management practices. Inefficient designs and management have resulted in excessive water use and high long term maintenance costs. Over a period of 14 months the "Irrigation Standards Committee" comprised of landscape and department representatives from the City of Tucson; Tucson Unified School District (TUSD); Pima County, U of A/Pima County Cooperative Extension, Low 4 program; Town of Oro Valley; Town of Marana; RainBird Corp., Ewing Irrigation Products and other irrigation and landscape professionals, has developed a draft model irrigation efficiency ordinance and procedures manual that it hopes will be adopted by the City of Tucson, Marana, Oro Valley and Pima County in the near future. The committee believes the ordinance will move the Tucson region closer to the goal of efficient irrigation practices at commercial, industrial and publicly owned facilities. In addition, regional uniformity of standards will reduce confusion for landscape professionals working in multiple jurisdictions.

The intent of the ordinance is to improve irrigation efficiency and reduce overall water use by prescribing irrigation system performance standards, and assigning a water allotment for each site based on its total "landscapable area". The model ordinance and proposed guidelines and procedures to implement it, are now complete. The committee has attempted to work out a process that is clear and simple for both the designers submitting the plans, and the jurisdictions reviewing the plans. This process is spelled out in the Design Guidelines Manual.

The committee has discussed how to accomplish the task of improving irrigation efficiency on commercial properties, without putting additional strain on jurisdictions to implement, monitor and enforce a new ordinance. The proposed ordinance would apply to commercial, industrial and publicly owned facilities, common areas in multi-family and master planned communities, parks, cemeteries, athletic fields and private sports facilities that have a minimum of ½ acre of landscapable area.

Applicability:

The ordinance would apply to all new development, and expansions or major renovations to: commercial, industrial and publicly-owned facilities; common areas in multi-family and master planned communities; parks; cemeteries; athletic fields and private sports facilities that have a minimum of ½ acre of landscapable area.

The primary components of the proposed ordinance for <u>new</u> commercial developments are to:

1) Require the developer to calculate and submit an annual "water allotment" with the site plan submittal based on the total landscapable area. Allotments are calculated at a rate of 1.5 acre feet per acre for low water use planting areas and 4.6 acre feet per acre for the allowable "mini oasis" area. The recommended allowable mini oasis area is 5% of the total landscapable area for commercial properties and 10% for multi-family properties. The remaining 90-95% of the landscapable area would be planted with low water use plants from the approved ADWR plant list.

   To assist in calculating the allotment, the ADWR plant list has been updated to include the estimated annual water use for each plant at maturity. This will allow designers and staff plan reviewers to determine whether the landscape design will likely stay within its assigned allotment when the plants are mature.

2) Require installation of a separate service meter for irrigation water use and a programable irrigation timer(s).

3) Require a landscape water audit by a certified landscape water auditor when the landscape is installed to make sure each new irrigation system meets prescribed efficiency standards spelled out in the ordinance. The average

distribution uniformity results for the site audit shall be a minimum of 50% distribution uniformity (d.u.) for all fixed spray systems, 65% d.u. for all rotary spray systems and 80% emission uniformity for drip irrigation, prior to issuance of a Certificate of Occupancy.

4) Require each property owner regulated by the ordinance to submit a water-use report with the total amount of landscape water used annually based on their landscape water meter(s) reading. The total water use would then be compared to the prescribed site allotment by the responsible jurisdiction to determine compliance. The committee envisions that each jurisdiction would set up a database to input the original water allotment information for each site subject to the ordinance when they apply for permits. Establishing a database would simplify comparing the annual water use reading for each site with their allotment and assist staff in determining compliance when annual water use reports are submitted by property owners.

Although the primary focus of the ordinance is **new** commercial developments, the committee felt that efforts should also be made to upgrade old systems that are inefficient.

This could be accomplished when a facility with over ½ acre of landscaped area changes ownership, possibly triggered when the facility initiates water service under a new owner, or applies for a permit to expand or renovate the property.

At Change of Ownership the owner would be required to:

1) Install a separate irrigation service meter, if none exists;

2) Submit their calculated water allotment for the *existing landscape*, using the prescribed annual application rates in the ordinance.

3) Calculate their conservation budget based on the allotment they would currently receive if they were a new property following the current regulations. The conservation budget provides a water use reduction goal for each property to voluntarily work towards.

4) Submit the site irrigation water use to the jurisdiction annually. Owners or their authorized agent would be required to read their irrigation service meter on the last day of the year and indicate their annual water use on the landscape water-use report form (provided by the appropriate jurisdiction) so it can determine if they are staying within their allotment. Compliance action would be determined by each jurisdiction individually and may depend upon when the landscape was installed, whether there are legitimate reasons for the overage and what improvements the owner is making to reduce the irrigation water use to stay within the allotment.

Exceptions:

1) As per the "Design Guidelines," planting restrictions (e.g. maximum percentage of mini-oasis area) do not apply to property changing ownership that is not expanding or renovating the landscape; or,

2) To properties with less than ½ acre of landscapable area.

Expansion or Major Renovations:

If major renovations or expansions to an existing facility and/or landscaped areas results in increasing the total landscapable area to ½ acre or more:

1) Properties shall use plants from the most current ADWR Low Water Use/Drought Tolerant Plant List on 100% of the expanded or renovated landscape area.

2) No additional mini-oasis allowance shall be given for the newly expanded or renovated area(s), unless the total percentage of existing mini-oasis area on the site is less than the total mini-oasis allowance available under the current provisions of this ordinance.

Reductions in Landscaped Area:

If there is a reduction in the total square footage of landscaped area on the site, the property owner shall separately calculate the areas currently planted in mini-oasis plants and in low water use plants and use the prescribed application rates to determine the new allotment for the site. The owner shall submit the new allotment to the jurisdiction when applying for permits to renovate the property and would be required to annually submit the site irrigation water use to the jurisdiction.

Top Ten reasons for implementing the Irrigation Efficiency Ordinance and Design Guidelines procedures manual:

1) There is a need for irrigation efficiency due to inefficient application of water and increasing demands on our limited water resources in the Tucson metropolitan area. It will also help preserve aesthetic and economic values in the community.

2) It reinforces and strengthens the local conservation ethic.

3) Fewer large irrigators are targeted overall, therefore it is easier for jurisdictions to administer and does not encumber small projects with the extra expense of landscape meters when the water saved would be minimal.

4) Regional uniformity of standards will reduce confusion for landscape professionals working in multiple jurisdictions in the Tucson region.

5) Jurisdictions can reduce the need for mandatory landscape irrigation reductions due to drought or high peak demand.

6) Water companies that are regulated by the Arizona Department of Water Resources may benefit from the reductions in water use (e.g. it may help those in the per capita program to meet their conservation targets, reduce the need for system expansions to meet peak demand and allow better management of water supplies during drought situations).

7) Well-maintained and managed irrigation systems will reduce runoff onto streets, parking lots and sidewalks from spray irrigated areas and damage to buildings due to over-spray, which is beneficial to the presiding jurisdiction, water company and the property owner. It also reduces the need for pest control because there is no standing water or soggy landscapes.

8) Saves water while allowing design flexibility. Although overall application efficiency is required to meet the site irrigation allotment, it does not entirely eliminate elements that are higher water use such as water features and turf. It does however, limit the allowable portion of the site that can be dedicated to higher water use through a mini oasis allotment.

9) Since a water allotment (budget) is an “efficiency standard”, excessive use can be identified and measures taken to assure properties stay within their annual allotment. The requirement for a separate landscape water meter also ensures that irrigation water use is accurately reported.

10) Overall irrigation water use would be more equitably distributed since irrigation allotments are assigned to each site based on their landscapable area, not based on whether or not the owner can afford to pay for and/or waste more water.

COMPLIANCE, RECOMMENDATIONS AND INCENTIVES/DISINCENTIVES

Compliance:

1. When properties change ownership, compliance with the irrigation efficiency ordinance standards could be initiated when the water company is contacted to provide water service. The water company could notify the municipality, or municipalities could make issuance of a certificate of occupancy contingent upon compliance with the efficiency standards, or deny water service until the ordinance requirements are met.

Additional Recommendations:

1. City and County owned buildings should make an effort to voluntarily upgrade their landscapes to meet the same standards being imposed on private owners. A specific period of time should be given to comply.

2. If feasible, set up a coordinated, computerized, billing and water use notification system, between the jurisdiction and the water companies within each jurisdiction, to facilitate annual water use reporting and compliance.

3. Possibly tie compliance to the water rates based on water use (low rates if the property stays within, or below their allotment, and a tiered structure with substantial increases in costs for water used above the allotment), and/or fines levied by the jurisdiction.

4. Require or encourage installation of central irrigation controllers at public and private commercial sites, tied to weather stations with flow sensors to more accurately apply irrigation based on site specific ETo.

5. On sites that use reclaimed water for irrigation, jurisdictions should make maintenance personnel aware that there will be a need to leach salts from the root zone periodically.

6. Jurisdictions should promote the preservation of our minimal native topsoil during site development. Existing topsoil should be stockpiled on the site and re-spread on planting areas after the site has been graded. Exposed hardpan is not a preferred growing medium for plants and has lower infiltration rates and soil moisture retention.

7. Pruning and thinning of foliage should not be done during hot months because it can increase plant water requirements (shading of the ground reduces evapotranspiration rates and creates microclimates).

Incentives And Disincentives: The committee identified incentives and disincentives that could be implemented to enhance the water savings potential of the ordinance.

Incentives:

1. Waive or greatly reduce irrigation water meter installation fees (currently tied to high development fees in some jurisdictions).

2. Incentives (i.e. better water rates, reduced permit fees) to encourage irrigation systems to be installed and maintained at a higher efficiency than required by the ordinance (based on water audit results).

3. Work with water companies to provide water rate incentives for facilities staying within or below their allotment.

4. After the initial allotment is assigned to facilities that were built prior to the effective date of the ordinance (e.g. upon change of ownership), incentives could be given to reduce their irrigation water use to the lower voluntary "conservation allotment". Offer a tax break, discount, bonus, or reduced rate for water if entities stay below their allotment or within the "conservation allotment".

5. Facility owners could require landscape maintenance contractors to take over paying the water bill on facilities they maintain, as an incentive to stay within the annual site allotment. Owners of existing facilities should give incentives to property managers to reduce water usage to their "conservation allotment". It would require that the property owner fund the improvements necessary to make the system efficient. However, efficient application of irrigation water would be the responsibility of the irrigator or manager. The irrigator or manager could be required by contract with the owner to pay the higher fee for water, or any fines assessed if the site exceeds its allotted water budget.

6. Provide incentives for private residences not subject to the ordinance to install separate irrigation meters for outdoor use.

Disincentives:

1. Facilities that exceeded their allotment could be charged a higher water rate or fine, or both. Money collected could be placed in an account for grants or low interest loans to improve irrigation systems and maintenance practices and/or to cover the cost of staff necessary to enforce compliance. A portion of the money could be made available to facilities that do not have the financial ability to make improvements in a timely manner and need to make upgrades or changes to their systems to stay within their water use allotment.